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Abstract

CRITICAL AND EXPONENTIAL ASSEMBLIES AT THE INSTITUTE OF NUCLEAR RESEARCH, ŚWIERK

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Since a few years ago activities to establish the experimental basis for research in the field of reactor physics and engineering have been carried out at the Nuclear Research Centre in Świerk. In 1963 three main research facilities have been put into operation : a swimming-pool type low-power reactor /MARYLA/, a graphite- and water - moderated critical assembly /ANNA/ and a graphite subcritical assembly /HELENA/.

A short technical description, basic physical parameters, and a survey of hitherto performed works at these facilities is given.

The programme of further research is also discussed. It includes:

1/ Reactor statics: buckling measurements for various geometries and lattices, micro- and macro- flux- distribution measurements, neutron temperature distribution measurements, application of the substitution method to reactor lattice investigations.

2/ Reactor kinetics: pile oscillator measurements, measurements of reactor parameters by noise methods, as well as with the aid of pulse neutron sources.

3/ A series of critical experiments concerning:

a/ the high-flux, graphite-water moderated reactor being designed at present,
b/ the medium-flux, light water moderated, 5 MW research reactor,
c/ the new core-type for the EWA reactor /in order to increase reactor power up to 10 MW/.